Trigonometry
Chapter 5 Test Review

1. Conversion of points

Convert from polar coordinates to rectangular coordinates: $\left(-3,\frac{\pi}{6}\right)$	Convert from rectangular coordinates to polar coordinates: $\left(-5,5\sqrt{3}\right)$

2. Conversion of equations

Convert the following equation from rectangular to polar coordinates $x^2+y^2=2y$	Convert the following equation from rectangular to polar coordinates $5xy=x^2$
Convert the following equation from polar to rectangular coordinates $r=\cos\theta-2$	Convert the following equation from polar to rectangular coordinates $r=\frac{5}{5+\sin\theta}$
Convert the following equation from polar to rectangular coordinates $r\csc\theta=4$	

3. Conversion of complex numbers

Write in polar form (express the argument in degrees): $-2+2\sqrt{3}i$	Write in polar form (express the argument in degrees): $\sqrt{7}-i$
Write in polar form (express the argument in degrees): $-5+2i$	Write in rectangular form: $2\left(\cos\frac{5\pi}{6}+i\sin\frac{5\pi}{6}\right)$

4. Find zw and z/w. Leave your answers in polar form

$z=8\left(\cos 200^\circ+i\sin 200^\circ\right)$ $w=4\left(\cos 180^\circ+i\sin 180^\circ\right)$	$z=-2-2i$ $w=5+5\sqrt{3}i$

5. Write each expression in the standard form a + bi

$\left[2\left(\cos 200^\circ+i\sin 200^\circ\right)\right]^5$	$(-2-2i)^8$

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6. Find all the complex roots. Leave your answers in polar form with the argument in degrees

The complex fourth roots of $-5+5i$	Solve: $x^6 = -1$

7. Find the position vector given initial point P = (2, -3) and terminal point Q = (5, 4)

8. Find various items relating to vectors. Given **v** = 4**i** + 2**j**, **w** = -3**i** + 6**j**

Find $\|v\|$	Find $\|w\|$
Find 3**v** – 2**w**	Find $\|4w - v\|$
Find the unit vector in the same direction as **v**	Find $v \cdot w$
Find the angle between **v** and **w**	

9. Find various items pertaining to vectors in 3D space. Given **v** = 5**i** – 2**j** – **k**, **w** = 4**i** + **j** + 3**k**

Find the distance from (-2, 1, 3) and (4, 5, -7)	Find the position vector from initial point P = (4, 1, 0) and terminal point Q = (-2, 3, 5)
Find $\|v\|$	Find 4**v** + 3**w**
Find the unit vector in the same direction as **v**	Find $v \cdot w$
Find the angle between **v** and **w**	

10. Given **v** = 2**i** - 5**j** + 3**k** and **w** = -**i** + 4**j** - 2**k**, find **v** x **w**